

OBSERVATIONS ON THE LIFE HISTORY OF  
CHLOROSEA BANKSARIA SPERRY  
(Lepidoptera: Geometridae)

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CHLOROSEA BANKSARIA Sperry

*Chlorosea nevadaria*, Packard, 1876, Mono. Geom., p. 378 (in part);  
Prout, 1932, Macrolep. World, 8:42 (not Packard, 1874).  
*Chlorosea banksaria* Sperry, 1944, Can. Ent., 76:36.

This beautiful moth is widespread throughout the Pacific States from British Columbia to southern California and is of rather common occurrence in much of its range. Nevertheless, its life history does not appear to have been published.

A single larva of this species was obtained April 12, 1948, from beating *Ceanothus thyrsiflorus* Esch. in the vicinity of Kings Mountain, San Mateo County, California, at approximately 2000 feet altitude. This caterpillar was reared in the laboratory on the above food plant, pupation occurred April 29, and the adult emerged May 16, 1948.

*Antepenultimate instar.* Head width 0.8 mm., height 0.7 mm., length 0.3 mm. No further observations made.

*Penultimate instar.* Head rather small, the thorax and abdomen with prominent lateral projections on the segments. Head slightly bilobed, coarsely rugose, purplish-brown, with light brown on ocellar region and front of lobes. Labrum and antennae light green. Width 1.0 mm., height 1.1 mm., length 0.6 mm.

Thorax with very prominent dorsal and lateral protuberances. Prothorax anteriorly with very high median conical pair of projections, extending dorso-anteriorly over the head, and with smaller pair laterad of these; two smaller pairs of protuberances posteriorly along dorsum, the posterior of these being quite small and inconspicuous. Mesothorax with three pairs of median humps dorsally, the anterior two rounded swellings, the posterior a prominent pair of protuberances. Metathorax with single pair of small median lobes. Dorso-lateral margins of meso- and metathorax produced into prominent lateral extensions. Dorsally dark green, with purplish cast; all projections, swellings and lateral extensions purple; spiracular swellings orange-yellow. Laterally and ventrally light green. Legs purplish. Surface of thorax and abdomen heavily

granular, the granules with whitish cast, especially on sides of body. Setae on thorax and abdomen small, colorless.

Abdomen dorsally with anterior mid-line paired swellings on each segment, these being quite small and inconspicuous on anterior segments but increasing in size posteriorly, on last segment very high and conspicuous. Lateral margins of each segment produced into long prominent extensions extending laterally and upwards but not beyond anterior margins of segments, being most produced at anterior margins of segments and most prominent on segments two, three, four and five; on posterior three segments reduced to large rounded swellings. Dorsally dark green, slightly lighter than on thorax; tips and margins of lateral extensions purple, as are the mid-line paired swellings, these latter becoming more prominently marked with purple posteriorly, so that the last four segments are purple dorsally. Laterally, green as above except posteriorly on last three segments, these being purplish and including both prolegs. Ventrally, deep purple on segments three and four, bordered laterally by broad band of white granules. Spiracles light orange-yellow. Intersegmental membranes yellow-green. Anal plate greenish with slight pinkish-purple cast posteriorly.

*Ultimate instar.* Appears as before. Head width 1.5 mm., height 1.7 mm., length 0.8 mm.; subrectangular, only slightly bilobed, with anterior surface flattened. Setae small, inconspicuous; second posterior setae near vertex; second adfrontal setae on same level as first posterior setae; first adfrontal setae equidistant from second adfrontal and first posterior setae, closer to these than to frontal setae; anterior setae form slightly more than a right angle; ocellar setae form right angle; six ocelli well developed.

Body lighter green, matching the *Ceanothus* leaves; head and legs reddish brown; thoracic markings reddish; abdominal markings red-brown with purple cast. All setae very small, inconspicuous. Prothoracic setae Ia, Ib, IIa from large dorsal reddish protuberances; IIb from posterior base of protuberance bearing IIa; IV and V below spiracle. Mesothoracic setae Ia from dorsal reddish protuberance, Ib laterad of this; remainder of setae from lateral projections. Metathoracic setae similarly arranged.

Abdominal setae I from anterior protuberances except on first segment, II from inconspicuous base; on segments six and seven I and II more laterad than on preceding segments; setae I on eighth segment mounted on very prominent spine directed posteriorly; III dorso-anterior to spiracles on segments two to seven, while on segments one and eight they are dorsad; setae IV and V at extreme ends of wide lateral projections; VI posterior; VII and VIII in usual positions. Spiracles on second, third, fourth, fifth, seventh and eighth segments on dorsal surface; those on remaining segments on lateral surface.

The larva has the trembling or quivering motions as has been noted for others in this subfamily in the genera *Nemoria* (Comstock and Dammers, 1937; Comstock and Henne, 1940; Comstock, 1945), *Synchlora* (Comstock and Dammers, 1937) and *Cheteoscelis* (Hulst, 1888).

*Pupa.* Light green, more or less concolorous with food plant; head regions and posterior part of abdomen ventrally shaded with yellow-green; wing cases and appendages rugose. Cremaster of eight curved spines, subequal in length, arising from lateral margins of last segment; the latter ventrally with surface thrown up into numerous ridges. Spiracles elongate, slightly shaded with yellow-brown. Length 14 mm., width 4 mm. A day or two before emergence the abdominal spots of the adult show through very plainly, and the antennae and other appendages become darker along their margins. Pupation occurred on the food plant, in a delicate webbing between adjacent branches and leaves.

The larvae of *Chlorochlamys chloroleucaria* (Guenée) and *Nemoria rubrifrontaria* (Packard) have been described and illustrated in detail by Dethier (1942). The larva of *Chlorosea banksaria* Sperry may be distinguished from them by the following characters: Front of head more square and broader; first and second adfrontal setae equidistant from first posterior setae; third anterior setae on same level with first adfrontal setae, as are the second adfrontal setae and the first posterior setae; anterior setae almost form a right angle. The larvae of *Chlorochlamys* are without the prominent lateral thoracic and abdominal projections and so are immediately distinguishable. *Chlorosea* and *Nemoria* may be further differentiated in the body regions by the very small and inconspicuous setae of the former; and that the lateral abdominal processes do not extend caudad of their respective segments, and are truncate anteriorly, usually extending anteriorly at right angles from the mid-line when viewed from above.

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